STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RESOURCES

EARL WARREN, Governor

C. H. PURCELL, Director of Public Works

EDWARD HYATT, State Engineer

REPORT ON

WATERMASTER SERVICE

IN

OOW CREEK WATERSHED DRAINAGE AREA
Shasta County, California

1945 DRAFT

Sacramento, California

EDWARD HYATT, STATE ENGINEER
CHIEF OF DIVISION

EARL WARREN
GOVERNOR OF CALIFORNIA

C. H. PURCELL
DIRECTOR

STATE OF CALIFORNIA

Department of Public Works

SACRAMENTO

DIVISION OF WATER RESOURCES
401 PUBLIC WORKS BUILDING

Mr. Gordon Zander
Supervising Hydraulic Engineer
Sacramento, California

Attention: Mr. Harrison Smitherman
Senior Hydraulic Engineer

Dear Sir:

Submitted herewith is the annual report covering watermaster service in the Cow Creek Watermaster Service Area, Shasta County, California, for the 1945 season.

The report presents a general description of the work and a discussion of the results obtained. Records of precipitation, run-off and other pertinent data are included.

Respectfully submitted,

G. M. Vickroy
Watermaster

FOR VICTORY
BUY
UNITED
STATES
SAVINGS
BONDS
AND STAMPS

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2. Net available Flow in Cubic Feet per Second - North Cow Creek.
3. Net available Flow in Cubic Feet per Second - Cedar Creek.
4. Net available Flow in Cubic Feet per Second - Oak Run Creek.
5. Net available Flow in Cubic Feet per Second - Clover Creek.

PLATES

1. Hydrograph of North Cow Creek - 1945.
2. Hydrograph of Cedar Creek - 1945.
3. Hydrograph of Oak Run Creek - 1945.
4. Hydrograph of Clover Creek - 1945.

INTRODUCTION

The Cow Creek Watermaster Service Area, Shasta County, California, was created by order of the Division of Water Resources, entered October 17, 1938, to include the water rights on North Cow Creek and its tributaries and on Oak Run Creek and its tributaries, in Shasta County, California, which water rights were established by decrees entered by the Superior Court, Shasta County, California, on April 29, 1932, in the case of Charles L. Lewis, et al. v. John Rutherford, et al., No. 5304, and on July 22, 1933, in the case of F. A. Colby, et al. v. L. O. Strayer, et al., No. 5701. On January 21, 1933, the area was enlarged by "Order Changing Cow Creek Watermaster Service Area, Shasta County, California, and Containing a Description of all the Lands Within said Area as so Changed", to embrace the water rights on Clover Creek and its tributaries, in Shasta County, California, as established by decree entered by the Superior Court, Shasta County, California, on October 4, 1937, in the case of Millville Ditch Company v. Jesse Rufford, et al., No. 6904.

Watermaster service in the Cow Creek Watermaster Service Area for the 1946 Season covered the regulation of diversions from the streams within the scope of the area in accordance with the "Distribution of Water Procedure" contained in Sections 4150 to 4178, inclusive, of the Water Code. Such service extended over the period from July 1 to September 30. O. M. Vickroy, Watermaster, administered the distribution of water during the entire period. Harrison Smithorm was Supervising Watermaster.

WATER SUPPLY

Precipitation

Data on precipitation as compiled from publications of the U. S. Weather Bureau at Shasta Dam are presented in Table 1 of this report. Based on this data the total precipitation for the 1944-45 season was 34.70 inches or about 90 per cent of the mean for 38 seasonal years (1907-45). Of this total 60 per cent fell during the period from October 1 to April 1.

Stream Flow

Records of the net available flow of North Cow Creek, Cedar Creek, Oak Run Creek and Clover Creek, as determined for each stream by summation of the amounts of water diverted therefrom by the various ditches plus the flow in the stream below the lowermost ditch, are shown in Tables 2, 3, 4 and 5, respectively. The records cover the periods from July 1 to September 30, 1945, which covers the period when regulation of diversions was necessary.

Hydrographs plotted from the data contained in the above tables, together with a graph indicating the decreed allotments on the respective streams, are presented in Plates 1, 2, 3 and 4.

DISTRIBUTION OF WATER

North Cow Creek

The regulation of diversions from North Cow Creek was made in accordance with the provisions of the decree in the case of Lenn v. Rutherford, No. 8804, Superior Court, Shasta County, California, entered April 29, 1933. The amounts of water available for distribution were as set forth in Table 3 submitted at the end of this report.

Distribution was made on a continuous flow basis throughout the entire season, the supply being sufficient to supply 100 per cent of continous flow allotments up to about August 1. Thereafter the flow gradually decreased to about 60 per cent of allotments on September 9 and remained at that figure for the rest of the season.

Cedar Creek

This stream is tributary to North Cow Creek and the water rights thereon are defined in the Lenn v. Rutherford decree. Distribution during the 1945 season was made in accordance with the provisions of said decree. The amounts of water available for distribution were as shown in Table 5.

The available water supply was in excess of decreed allotments up to about July 8 but gradually decreased to approximately 25 per cent of full allotments by September 1 and remained at that amount up to September 30, when watermaster service was discontinued for the 1945 season.

Oak Run Creek

The regulation of Oak Run Creek was made in accordance with the provisions of the decree in the case of Colby v. Strayer, No. 5701, Superior Court, Shasta County, California, entered on July 22, 1932. The amounts of water available for distribution during the 1945 season were as shown in Table 6.

Distribution of Water (Cont'd.)

Clover Creek

The regulation of diversions from Clover Creek was made in accordance with the provisions of the decree in the case of Millville Ditch Company v. Thurford, No. 6904, Superior Court, Shasta County, California, entered on October 1, 1937. The amounts available for distribution during the 1942 season were as shown in Table 5.

OWNERSHIP OF LANDS AND WATER RIGHTS
COW CREEK WATERMASTER SERVICE AREA

Changes in Ownership

The changes in ownership of lands and water rights which have occurred subsequent to filing "Statement for Cow Creek Watermaster Service Area, County of Shasta, State of California, for 1945" and which shall be included in statement for said watermaster service area for 1946, are listed in the following tabulation:

Tract No.	Name of Water Right Owner Appearing in 1945 Statement	Name of Water Right Owner to appear in 1946 Statement	Amount of water a.f.a.
4-13	George Bibbins and Carol Bibbins	Fred V. Herman	2.00
4-3	E. C. Frisbie	Hugh Bowen and Mellie Bowen	1.00
4-50	David B. Covey	Roy W. Byers	0.25
4-42	Marjorie Colby Chase	Wilber J. Webber and Carmen B. Webber	0.74
4-21	C. B. Hurdin	Roscyne B. Whitney	0.52
4-07	Austin A. Harper	Arnold Harper and Lucinda B. Harper	0.25
4-74	Lenn, et al.	Francis T. Crowe and Linnie K. Crowe	0.10
4-19	E. G. Weigart	Fred V. Herman	0.74
4-77	Estate of B. F. Keith	R. F. Casper	0.37
4-7	Walter F. Mason and Helen R. Mason	John Fossett	0.63
4-44	John K. Montague and Mollie Montague	George S. Preston	0.25
4-21	Roy O. Orr	Carl N. Stewart	0.75

TABLE 1

PRECIPITATION AT HEATH DAM - 1906-1945

Monthly, Seasonal and Annual

Season	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Seasonal
1945	4.58	9.97	8.89	5.93	10.73	8.50	0.75	6.56	0.69	0.00	0.10	0.00	54.70
Departure from Normal	+1.47	+1.67	-0.39	-0.46	-0.69	+0.98	-3.45	+4.21	-0.55	-0.12	+0.02	-0.90	-6.19
Normal	3.11	8.30	9.28	10.37	11.42	7.52	4.20	2.35	1.24	0.12	0.08	0.90	60.89

TABLE 2

NET AVAILABLE FLOW IN CUBIC FEET PER SECOND

NORTH FOR CREEK

July 1 to September 30, 1945

Day	July	Aug.	Sept.	
1	24.00	19.00	14.00	
2	24.00	18.00	14.00	
3	24.00	17.00	14.00	
4	24.00	17.00	14.00	
5	24.00	17.00	14.00	
6	24.00	16.00	13.00	
7	24.00	16.00	13.00	
8	24.00	16.00	13.00	
9	24.00	16.00	12.00	
10	24.00	16.00	12.00	
11	24.00	16.00	12.00	
12	24.00	15.00	12.00	
13	24.00	15.00	12.00	
14	24.00	16.00	12.00	
15	24.00	16.00	12.00	
16	24.00	15.00	12.00	
17	24.00	15.00	12.00	
18	24.00	15.00	12.00	
19	24.00	15.00	12.00	
20	23.00	15.00	12.00	
21	23.00	15.00	12.00	
22	23.00	15.00	12.00	
23	22.00	15.00	12.00	
24	22.00	15.00	12.00	
25	22.00	15.00	12.00	
26	22.00	15.00	12.00	
27	22.00	15.00	12.00	
28	21.00	15.00	12.00	
29	21.00	15.00	12.00	
30	20.00	15.00	12.00	
31	19.00	15.00		
Total Sec. Feet Days	716	481	373	92 day Period
Mean Sec. Feet	23.00	15.50	12.40	
Total Ac. Ft.	1420	954	740	

TABLE 3

NET AVAILABLE FLOW IN CUBIC FEET PER SECOND

CEDAR CREEK

July 1 to September 30, 1945

Day	July	Aug.	Sept.
1	7.0	4.0	2.0
2	7.0	4.0	2.0
3	7.0	4.0	2.0
4	7.0	4.0	2.0
5	7.0	4.0	2.0
6	7.0	4.0	2.0
7	7.0	4.0	2.0
8	6.0	4.0	2.0
9	6.0	3.5	2.0
10	6.0	3.5	2.0
11	6.0	3.5	2.0
12	6.0	3.5	2.0
13	5.0	3.5	2.0
14	5.0	3.5	2.0
15	5.0	3.0	2.0
16	5.0	3.0	2.0
17	5.0	3.0	2.0
18	5.0	3.0	2.0
19	5.0	3.0	2.0
20	5.0	3.0	2.0
21	5.0	3.0	2.0
22	5.0	3.0	2.0
23	4.5	3.0	2.0
24	4.5	3.0	2.0
25	4.5	3.0	2.0
26	4.5	2.5	2.0
27	4.5	2.5	2.0
28	4.5	2.5	2.0
29	4.0	2.5	2.0
30	4.0	2.5	2.0
31	4.0	2.5	
Total Sec. Ft. Days	170.0	101.0	60.0
Mean Sec. Ft.	5.5	3.26	2.00
Total Acre. Ft.	337	200	119

TABLE 4

NET AVAILABLE FLOW IN CUBIC FEET PER SECOND

OAK RUN CREEK

July 1 to September 30, 1945

Day	July	Aug.	Sept.	
1	10.0	8.0	6.0	
2	10.0	8.0	6.0	
3	10.0	8.0	6.0	
4	10.0	8.0	6.0	
5	10.0	8.0	6.0	
6	10.0	8.0	6.0	
7	10.0	8.0	6.0	
8	10.0	8.0	6.0	
9	10.0	8.0	6.0	
10	10.0	7.5	6.0	
11	9.5	7.5	6.0	
12	9.5	7.5	6.0	
13	9.50	7.5	6.0	
14	9.5	7.5	6.0	
15	9.5	7.5	6.0	
16	9.5	7.5	6.0	
17	9.5	7.5	6.0	
18	9.5	7.0	6.0	
19	9.0	7.0	6.0	
20	9.0	7.0	6.0	
21	9.0	7.0	6.0	
22	9.0	7.0	6.0	
23	9.0	7.0	6.0	
24	9.0	7.0	6.0	
25	9.0	7.0	6.0	
26	8.5	7.0	6.0	
27	8.5	7.0	6.0	
28	8.5	7.0	6.0	
29	8.5	7.0	6.0	
30	8.0	7.0	6.0	
31	8.0	7.0		
Total Sec. Ft. Days	289.0	230.0	180.0	92 day Period
Mean Sec. Ft.	9.3	7.9	6.0	
Total Ac. Feet	573	456	357	

TABLE 5

NET AVAILABLE FLOW IN CUBIC FEET PER SECOND

GLOVER CREEK

July 1 to September 30, 1945

Day	July	Aug.	Sept.	
1	25	19	18	
2	25	19	18	
3	25	19	18	
4	25	19	18	
5	25	19	18	
6	25	19	18	
7	25	19	18	
8	24	19	18	
9	24	19	18	
10	24	19	18	
11	24	19	18	
12	24	19	18	
13	24	19	18	
14	24	19	18	
15	24	19	18	
16	23	19	18	
17	23	19	18	
18	23	19	18	
19	23	19	18	
20	22	19	18	
21	22	19	18	
22	22	19	18	
23	22	19	18	
24	22	19	18	
25	21	19	18	
26	21	19	18	
27	21	19	18	
28	21	19	18	
29	20	19	18	
30	20	19	18	
31	20	19		
Total Sec. Ft. Days	715	560	540	92 day Period
Mean Sec. Ft.	23	18	18	
Total Ac. Feet	1414	1110	1070	

PLATE 1

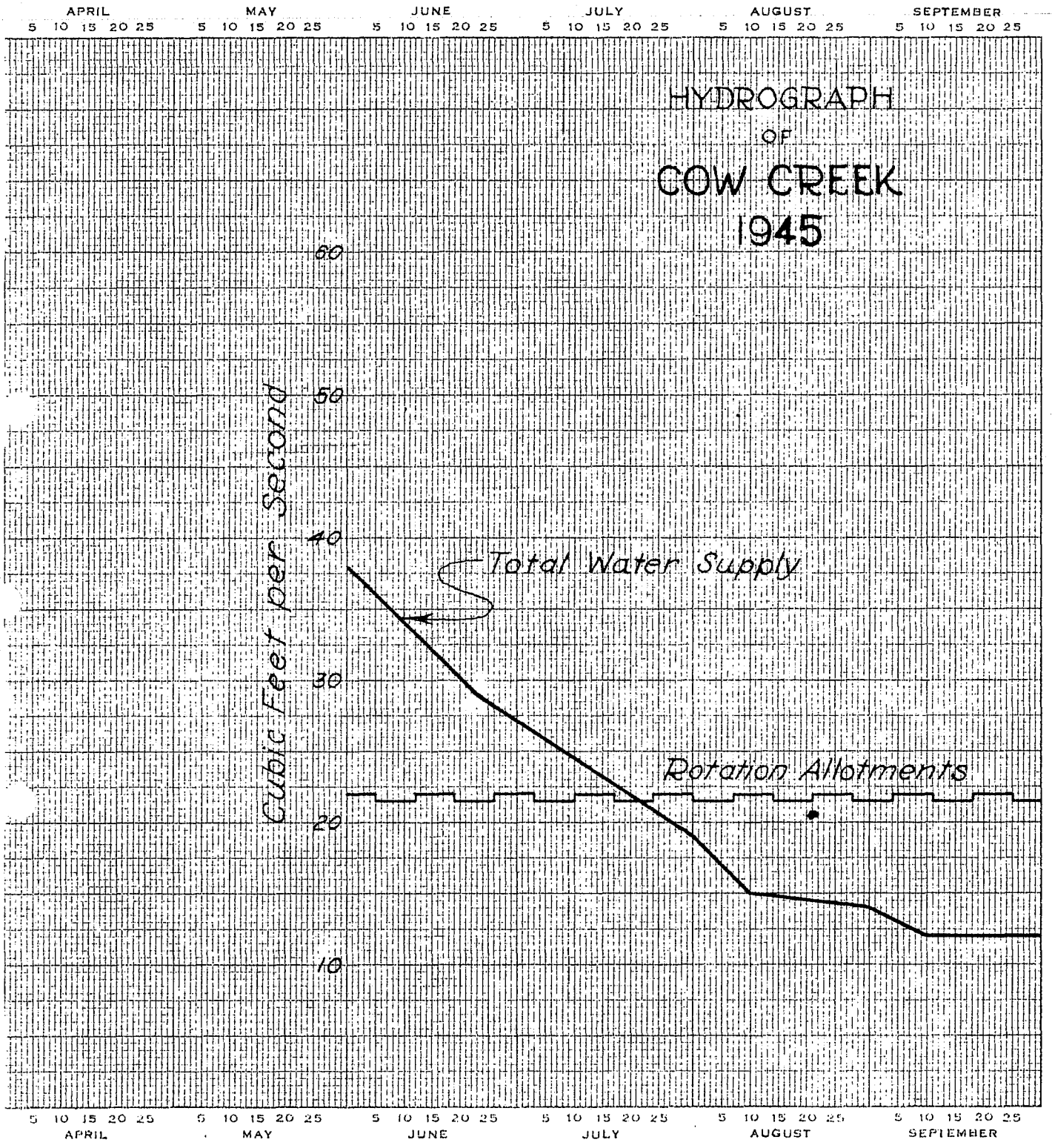

HYDROGRAPH
OF
COW CREEK
1945
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
5 10 15 20 25
60
50
40
30
20
10
Cubic Feet per Second
Total Water Supply
Rotation Allotments

PLATE 2

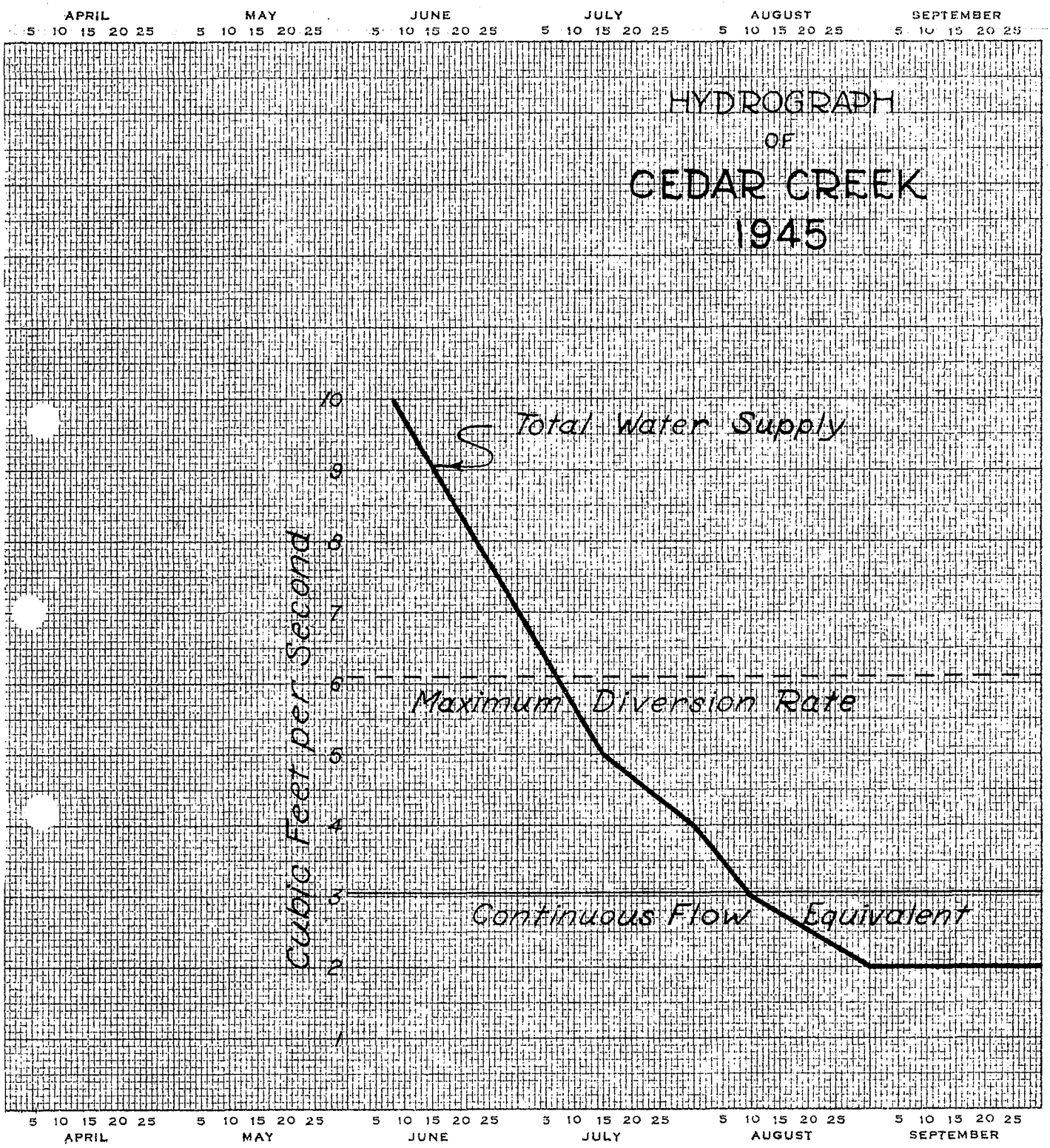

HYDROGRAPH
OF
CEDAR CREEK
1945
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
5 10 15 20 25
Total Water Supply
Maximum Diversion Rate
Continuous Flow Equivalent
Cubic Feet per Second
10
9
8
7
6
5
4
3
2
1

PLATE 3

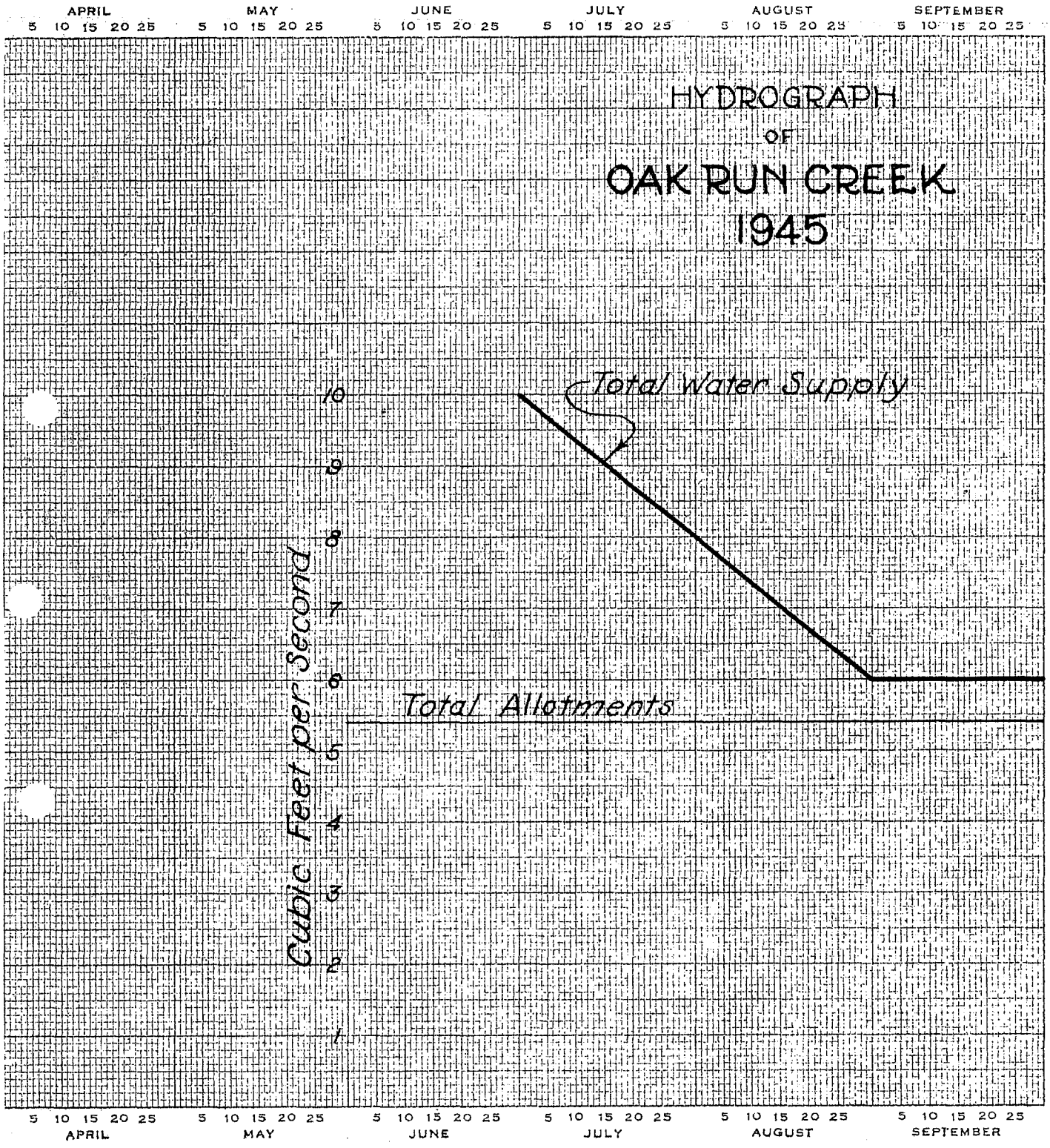
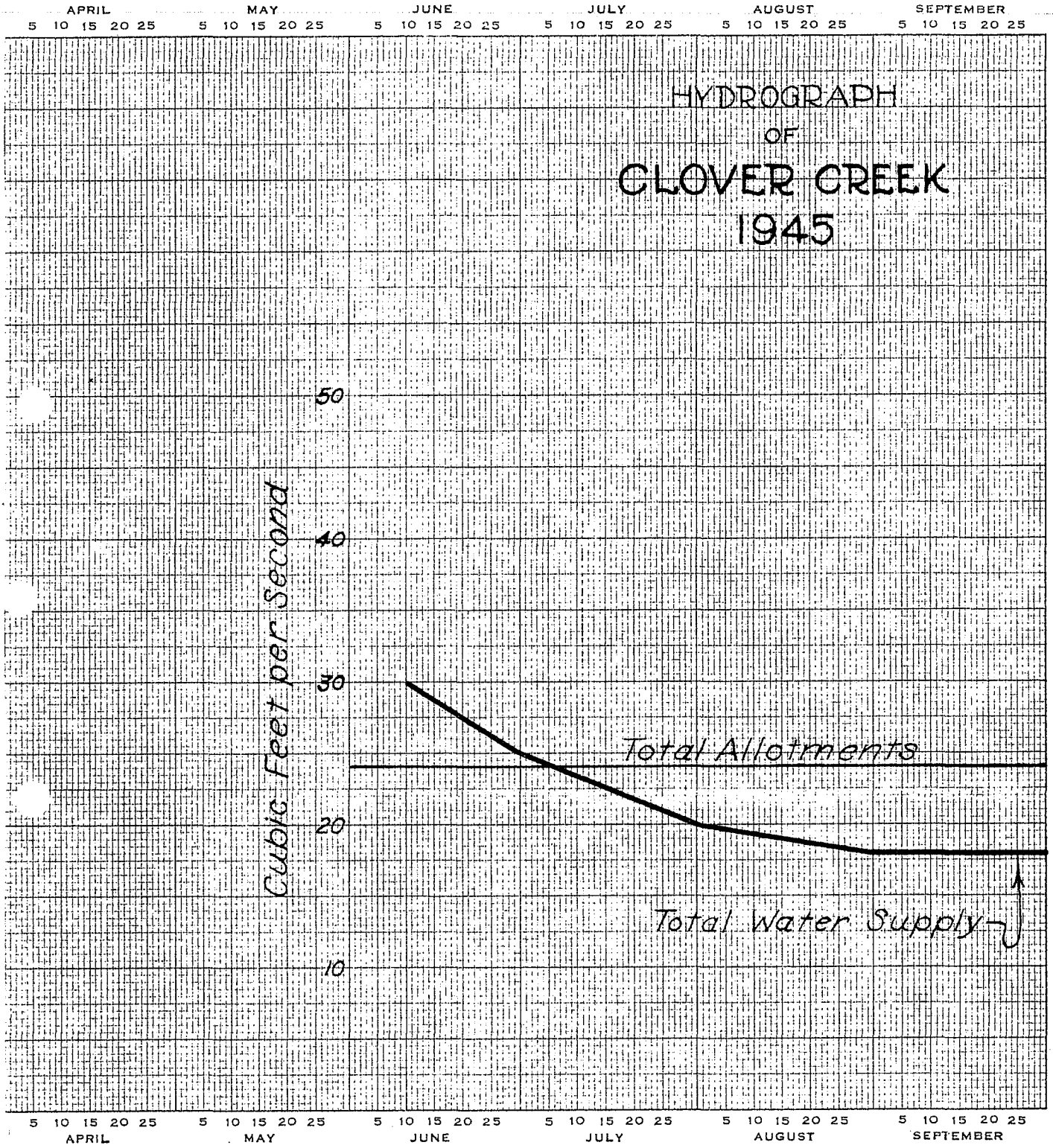

HYDROGRAPH
OF
OAK RUN CREEK
1945
Total Water Supply
Total Allotments
Cubic Feet per Second
10
9
8
7
6
5
4
3
2
1
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
5 10 15 20 25

PLATE 4


HYDROGRAPH
OF
CLOVER CREEK
1945
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
5 10 15 20 25
Cubic Feet per Second
50
40
30
20
10
Total Allotments
Total Water Supply